Abstract Submitted
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Plasma and thermal assisted selenization for the preparation of chalcopyrite light-absorbing layers[1] ZEHRA CEVHER, ZHI HUANG, YUHANG REN, Hunter College, City University of New York, HUNTER COLLEGE, CITY UNIVERSITY OF NEW YORK TEAM — Chalcopyrite compound has attracted much attention most recently because of their application in high efficient photovoltaic devices. In order to obtain a decent chalcopyrite photovoltaic device, it is very critical to optimize the metallic precursor layers and choose a suitable selenization technique. We demonstrate plasma and thermal assisted selenium cracking methods for preparing Cu(In,Ga)Se_2 (CIGS) semiconductor films using elemental selenium vapor. The selenization process includes the modification of the ionization state of Se species by radio frequency plasma and/or thermal heating and homogenous control of interactions with CuInGa metallic precursors. We obtained CIGS absorber layers with improved homogeneity and crystallization. The result is explained by the enhancement of reaction kinetics between the reduced Se phase and metallic precursor layers.

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